ELECTRONIC APPARATUS, WIRELESS SIGNAL RECEIVING METHOD THEREOF AND SYSTEMS HAVING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority from Korean Patent Application No. 10-2014-0077529, filed on Jun. 24, 2014 in the Korean Intellectual Property Office, the entire disclosure of which is incorporated herein by reference.

BACKGROUND

[0002] Field

[0003] Apparatuses and methods consistent with exemplary embodiments relate to an electronic apparatus, a wireless signal receiving method thereof and systems having the same, and more particularly, an electronic apparatus which transmits and receives a control signal or data by using a first wireless signal, such as an infrared (IR) signal or a Bluetooth signal, and a second wireless signal, such as a WiFi (wireless Fidelity) signal or a long term evolution (LTE) signal, a wireless signal receiving method thereof and systems having the same.

[0004] Description of Related Art

[0005] An electronic apparatus, such as a set-top box, a mobile phone, a smart phone, a notebook computer, a personal digital assistant (PDA), a tablet personal computer (PC) or the like, is generally provided with an IR module or a Bluetooth module (hereinafter, referred to as a first wireless module) to transmit and receive a control signal or data by a first wireless signal, such as an IR signal or a Bluetooth signal. The first wireless module receives the control signal from a remote controller or transmits and receives the data to and from other apparatuses to share the data with the other apparatuses.

[0006] In recent, in order to allow a user to do the internet through the electronic apparatus at a place in which an access point such as a wired or wireless router is provided, the electronic apparatuses in which a WiFi module or a LTE module (hereinafter, referred to as a second wireless module) is additionally embedded to transmit and receive a control signal or data by a second wireless signal, such as a WiFi signal or a LTE signal, different from the first wireless signal are increasing in number.

[0007] However, the electronic apparatus, such as a set-top box, a mobile phone, a smart phone, a notebook computer, a PDA, a tablet PC or the like, is relatively small in size. Thus, there is a problem in that the first and the second wireless modules should be structurally and spatially disposed adjacent to each other.

[0008] As a result, the electronic apparatus may present a problem in that if the first wireless module receives the first wireless signal when the second wireless module is in operation, the first wireless signal is interfered with the second wireless signal, a current or the like generated by the second wireless module, so that noises are created in the first wireless signal, thereby resulting in a distortion of the first wireless signal. In this case, the electronic apparatus may fail to recognize the first wireless signal to become uncontrollable or generate errors in data reception.

[0009] Accordingly, there is a need for an apparatus including the first and the second wireless modules or method thereof, which can prevent a problem in that when the first wireless module receives the first wireless signal in a state that the second wireless module is operated in operation, noises are created in the first wireless signal to distort the first wireless signal due to the interference by the second wireless module.

SUMMARY

[0010] Methods and apparatuses consistent with exemplary embodiments relate an electronic apparatus, a wireless signal receiving method thereof and systems having the same, which can prevent a problem in that when a first wireless module receives a first wireless signal, such as an IR signal or a Bluetooth signal, the first wireless signal is distorted due to an interference by a second wireless module for transmitting and receiving a second wireless signal, such as a WiFi signal or a LTE signal, thereby resulting in malfunctions or errors in data reception.

[0011] In accordance with an aspect of an exemplary embodiment, there is provided an electronic apparatus including a first wireless module configured to receive, or transmit and receive a first wireless signal corresponding to a user's input from, or to and from an external apparatus; a second wireless module configured to transmit and receive a second wireless signal different from the first wireless signal via a network; and a controller configured to determine whether the first wireless signal received by the first wireless module is a normal signal, and control a power supplied to the second wireless module, based on the determination. Here, the first wireless module may include at least one of an IR module to generate an IR signal and a Bluetooth module to generate a Bluetooth signal, and the second wireless module may include at least one of a WiFi module to generate a WiFi signal and a long term evolution (LTE) module to generate a LTE signal. With this, the electronic apparatus can prevent the problem in that the IR signal of the IR module or the Bluetooth signal of Bluetooth module is distorted due to an interference by the WiFi module or the LTE module, thereby resulting in malfunctions or errors in data reception.

[0012] The electronic apparatus may further include a signal analyzer to analyze the received first wireless signal. With this analysis, an abnormal state in which the first wireless signal is distorted to have noises therein may be detected. At this time, the controller may be configured to control the signal analyzer to analyze the received first wireless signal when the second wireless module is in operation, and determine whether the received first wireless signal is the normal signal based on the analysis. Here, the signal analyzer may be configured to analyze whether the received first wireless signal has a format coinciding with a predetermined pulse format.

[0013] The controller may be configured to adjust a voltage supplied to the second wireless module, in a first voltage value if determining that the received wireless signal is the normal signal, and in a second voltage value lower than the first voltage value if determining that the received wireless signal is an abnormal signal. Here, the first voltage value may include a voltage value to normally or stably drive the second wireless module. That is, the first voltage value may include a voltage value defined as a standard.

[0014] The second voltage value may include a minimum voltage value required to operate the second wireless module. Alternatively, the second voltage value may include a